The. difference of weight between the gas columns, or the buoyancy in the chimney amounts, therefore, per I square metro sot-Lion to 25*1 kilogrammes, or 25*1 millimetres of water.
The, calculated <1 riving forces—
(1) (J';>7 a,nd f>-:>(.) millimetres of water in d for the gas,
(2) H millimetres of water in // for the air,
i;i) 25*1 millimetres of water in w for the waste gases, must, appear in the furnaeo system, \vhen this is filled with gases of the assumed composition and temperature, and one regards these1, gases as being, by the closure of the openings at </, //, and w, in some, wa,y brought to rest.
If these, oponings am free, these forces would be the cause of a, continuous stream of gases passing through the entire furnace. The movements of these will bo the livelier, and correspondingly the working of the, furnace better, the greater the driving forces are ; naturally up a certain limit.
The foregoing calculations demonstrate that, for equal temperature, and equal composition, of the gas, the buoyancy in a specified portion of the furnaeo rises and falls with diiYerenco of bright of the entering and issuing portions, so that they can adapt their proportions to the, required object. In the. foregoing example forces wore obtained from several components, the ascertained values of which were shown under tlie bondings I to H, and which wore all operative in the same direction. Out*, might therefrom bo inclined to regard, as a result, all forces which the passage of the heated gas through the furnace occasioned as being the sum of 1 and 8, whilst for the a,ir the sum of 2 and J$ ca.mo in question.
From the circumstance that in the, open-hearth furnace all parts, but, abmv. all the regenerator chambers, are most practically arranged symmetrically, it follows that, for a specified height of chimney, the choice of lower chambers, as opposed to higher, must.-certainly have as a consequence a diminution of the buoyancy at the entrance ends, but that simultaneously the buoyancy in the adjacent outlet ends must be raised to the same amount, since, the lower chambers now cort'eHpondingly must increase the usefulness of the height of the chimney. But the, total power will still remain the same,